

SEQUENCE LISTING

<110> KIKUCHI, YASUFUMI
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KINOSHITA, YASUKO
IIJIMA, SHIGEYUKI
FUKUSHIMA, NAOSHI
TSUCHIYA, MASAYUKI

<120> HUMANIZED ANTI-CD47 ANTIBODY

<130> 060641-0113

<140> 10/578,840

<141> 2006-05-10

<150> PCT/JP04/016744

<151> 2004-11-11

<150> JP 2003-381406

<151> 2003-11-11

<160> 121

<170> PatentIn Ver. 3.3

<210> 1

<211> 133

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1

cccaagcttc caccatggaa tggagctgga tatttctctt cctcctgtca ggaactgcag 60
gtgtccactc ccaggtgcag ctggtgcagt ctggggctga ggtgaagaag cctggggcct 120
cagtgaaggt ttc 133

<210> 2

<211> 133

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2

ggcttgagtg gatgggatat atttatcctt acaatgatgg tactaagtat aatgagaagt 60
tcaaggacag agtcacgatg acccgggaca cgtccacgag cacagtctac atggagttga 120
gcagtctcag atc 133

<210> 3
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 3
 tgtaaggata aatatatccc atccactcaa gcccttggtcc aggggcctgt cgcacccagt 60
 gaataacatg gttggcgaag gtgtatccag atgccttaca ggaaaccttc actgaggccc 120
 caggcttctt cac 133

<210> 4
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 4
 cgcggatcca ctcacctgag gagacggtga ccagggttcc ttggccccag tcgtcgtaag 60
 tatagtaacc ccctctagca caataataga cggccgtgtc ctcagatctg agactgctca 120
 actccatgta gac 133

<210> 5
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 5
 cccaagcttc caccatggaa tgg 23

<210> 6
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 6
 cgcggatcca ctcacctgag gag 23

<210> 7
 <211> 424
 <212> DNA
 <213> Artificial Sequence

<220>
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 plasmid

<220>
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 <222> (1)..(408)

<400> 7
 atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45
 gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192
 Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60
 gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80
 gag aag ttc aag gac aga gtc acg atg acc cgg gac acg tcc acg agc 288
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser
 85 90 95
 aca gtc tac atg gag ttg agc agt ctc aga tct gag gac acg gcc gtc 336
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110
 tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125
 gga acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg 424
 Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 8
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 8

gacagagtca cgatgacctc agacacgtcc acgagcacag

40

<210> 9

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 9

ggatcatcgtg actctgtc

18

<210> 10

<211> 424

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(408)

<400> 10

atg	gaa	tgg	agc	tgg	ata	ttt	ctc	ttc	ctc	ctg	tca	gga	act	gca	ggt	48
Met	Glu	Trp	Ser	Trp	Ile	Phe	Leu	Phe	Leu	Leu	Ser	Gly	Thr	Ala	Gly	
1				5					10					15		

gtc	cac	tcc	cag	gtg	cag	ctg	gtg	cag	tct	ggg	gct	gag	gtg	aag	aag	96
Val	His	Ser	Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	
			20					25					30			

cct	ggg	gcc	tca	gtg	aag	gtt	tcc	tgt	aag	gca	tct	gga	tac	acc	ttc	144
Pro	Gly	Ala	Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	
		35					40					45				

gcc	aac	cat	gtt	att	cac	tgg	gtg	cga	cag	gcc	cct	gga	caa	ggg	ctt	192
Ala	Asn	His	Val	Ile	His	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	
	50					55				60						

gag	tgg	atg	gga	tat	att	tat	cct	tac	aat	gat	ggt	act	aag	tat	aat	240
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn	
65				70					75						80	

gag	aag	ttc	aag	gac	aga	gtc	acg	atg	acc	tca	gac	acg	tcc	acg	agc	288
Glu	Lys	Phe	Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Thr	Ser	
			85					90						95		

gga acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg 424
Gly Thr Leu Val Thr Val Ser Ser
130 135

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<210> 11
<211> 40
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
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<400> 11
gcacatctggat acacacttcac caaccatggtt attcactggg      40
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<210> 12
<211> 18
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

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<400> 12
gaaggtgtat ccagatgc 18
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<210> 13
<211> 424
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
      plasmid
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<220>  
<221> CDS  
<222> (1)..(408)
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<400> 13
atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt    48
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
      1              5              10              15
```

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag	96
Val His Ser Gln Val Gln Leu Val Ser Gln Gly Ala Glu Val Lys Lys	
20 25 30	
cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc	144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe	
35 40 45	
acc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt	192
Thr Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu	
50 55 60	
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat	240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn	
65 70 75 80	
gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc acg agc	288
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser	
85 90 95	
aca gtc tac atg gag ttg agc agt ctc aga tct gag gac acg gcc gtc	336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val	
100 105 110	
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa	384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Thr Tyr Asp Asp Trp Gly Gln	
115 120 125	
gga acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg	424
Gly Thr Leu Val Thr Val Ser Ser	
130 135	

<210> 14

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 14

aatgagaagt tcaaggacaa agtcacgatg acctcagac

39

<210> 15

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 15
gtccttgaac ttctcatt

18

<210> 16
<211> 424
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<220>
<221> CDS
<222> (1)..(408)

<400> 16
atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192
Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
65 70 75 80

gag aag ttc aag gac aaa gtc acg atg acc tca gac acg tcc acg agc 288
Glu Lys Phe Lys Asp Lys Val Thr Met Thr Ser Asp Thr Ser Thr Ser
85 90 95

aca gtc tac atg gag ttg agc agt ctc aga tct gag gac acg gcc gtc 336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
115 120 125

gga acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg 424
Gly Thr Leu Val Thr Val Ser Ser
130 135

<210> 17
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 17
 ttcaaggaca gagtcacgct gacctcagac acgtccacg 39

<210> 18
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 18
 cgtgactctg tccttgaa 18

<210> 19
 <211> 424
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(408)

<400> 19
 atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45
 gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192
 Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60


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<210> 20
<211> 39
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
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<400> 20
gagcagctctc agatctgacg acacggccgt ctattattg 39

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<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

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<400> 21
cgtcagatct gagactgctc 20
```

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<210> 22
<211> 424
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(408)

<400> 22

atg	gaa	tgg	agc	tgg	ata	ttt	ctc	ttc	ctc	ctg	tca	gga	act	gca	ggg	48
Met	Glu	Trp	Ser	Trp	Ile	Phe	Leu	Phe	Leu	Leu	Ser	Gly	Thr	Ala	Gly	
1				5					10					15		

gtc	cac	tcc	cag	gtg	cag	ctg	gtg	cag	tct	ggg	gct	gag	gtg	aag	aag	96
Val	His	Ser	Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	
			20					25					30			

cct	ggg	gcc	tca	gtg	aag	gtt	tcc	tgt	aag	gca	tct	gga	tac	acc	ttc	144
Pro	Gly	Ala	Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	
		35					40					45				

acc	aac	cat	gtt	att	cac	tgg	gtg	cga	cag	gcc	cct	gga	caa	ggg	ctt	192
Thr	Asn	His	Val	Ile	His	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	
	50					55					60					

gag	tgg	atg	gga	tat	att	tat	cct	tac	aat	gat	ggg	act	aag	tat	aat	240
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn	
65					70				75						80	

gag	aag	ttc	aag	gac	aga	gtc	acg	atg	acc	tca	gac	acg	tcc	acg	agc	288
Glu	Lys	Phe	Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Thr	Ser	
				85				90						95		

aca	gtc	tac	atg	gag	ttg	agc	agt	ctc	aga	tct	gac	gac	acg	gcc	gtc	336
Thr	Val	Tyr	Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	
			100					105						110		

tat	tat	tgt	gct	aga	ggg	ggg	tac	tat	act	tac	gac	gac	tgg	ggc	caa	384
Tyr	Tyr	Cys	Ala	Arg	Gly	Gly	Tyr	Tyr	Thr	Tyr	Asp	Asp	Trp	Gly	Gln	
		115					120					125				

gga	acc	ctg	gtc	acc	gtc	tcc	tca	ggtgagtgga	tccgcg							424
Gly	Thr	Leu	Val	Thr	Val	Ser	Ser									
	130					135										

<210> 23

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 23

gaagcctggg gcctcagtc aggtttcctg taagg 35

<210> 24
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 24
 aaccatgtta ttacttggt ggcacaggcc cctggacaa

39

<210> 25
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 25
 gatgacctca gacacgtcca tcagcacagc ctacatggag ttg

43

<210> 26
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 26
 cactgaggcc ccaggcttc

19

<210> 27
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 27
 ccagtgaata acatgggt

18

<210> 28
 <211> 49
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 28

cgcggatcca ctcacctgag gagacggtga ccagggttgc ttggcccca

49

<210> 29

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 29

ggacgtgtct gaggtcatcg

20

<210> 30

<211> 424

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(408)

<400> 30

atg	gaa	tgg	agc	tgg	ata	ttt	ctc	ttc	ctc	ctg	tca	gga	act	gca	ggt	48
Met	Glu	Trp	Ser	Trp	Ile	Phe	Leu	Phe	Leu	Leu	Ser	Gly	Thr	Ala	Gly	
1				5					10					15		

gtc	cac	tcc	cag	gtg	cag	ctg	gtg	cag	tct	ggg	gct	gag	gtg	aag	aag	96
Val	His	Ser	Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	
			20					25					30			

cct	ggg	gcc	tca	gtg	cag	gtt	tcc	tgt	aag	gca	tct	gga	tac	acc	ttc	144
Pro	Gly	Ala	Ser	Val	Gln	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	
		35					40					45				

acc	aac	cat	gtt	att	cac	tgg	ctg	cga	cag	gcc	cct	gga	caa	ggg	ctt	192
Thr	Asn	His	Val	Ile	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	
	50					55				60						

gag	tgg	atg	gga	tat	att	tat	cct	tac	aat	gat	ggt	act	aag	tat	aat	240
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn	
65					70				75						80	

gag	aag	ttc	aag	gac	aga	gtc	acg	atg	acc	tca	gac	acg	tcc	atc	agc	288
Glu	Lys	Phe	Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Ile	Ser	
			85						90					95		

```

aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val
          100                      105                      110

```

```

tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
          115                      120                      125

```

```

gca acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg 424
Ala Thr Leu Val Thr Val Ser Ser
          130                      135

```

<210> 31

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 31

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cccaagcttc caccatgagg ctccctgctc agctcctggg gctgctaata ctctgggtcc 60
caggctccag tggggatggt gtgatgactc agtctccact ctccctgccc gtcacccttg 120
gacagccggc                                     130

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<210> 32

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 32

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cagcagaggc caggccaatc tccaaggcgc ctaatttata aagtttccaa ccgattttct 60
ggtgtcccag acagattcag cggcagtggg tcaggcactg atttcacact gaaaatcagc 120
aggggtggagg                                     130

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<210> 33

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 33

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ggcgccttgg agattggcct ggcctctgct gaaaccaatg taaataggtc tttccattac 60
tgtgcacaag gctctgactt gatctgcagg agatggaggc cggctgtcca aggggtgacgg 120
gcagggagag                                     130

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<210> 34
 <211> 130
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 34
 cgcggtacca ctcacgtttg atctccagct tggccccctg gccaaacgtg tacggaacat 60
 gtgtactttg agagcagtaa taaactccaa catcctcagc ctccaccctg ctgattttca 120
 gtgtgaaatc 130

<210> 35
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 35
 cccaagcttc caccatgagg ctc 23

<210> 36
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 36
 cgcggtacca ctcacgtttg atc 23

<210> 37
 <211> 412
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(396)

<400> 37

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt cag cag agg 192
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg
 50 55 60

cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240
 Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
 65 70 75 80

tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95

aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110

tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

ctg gag atc aaa cgtgagtgga tccgcg 412
 Leu Glu Ile Lys
 130

<210> 38

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 38

ccaggccaat ctccaaggct cctaatttat aaagtttcc 39

<210> 39

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 39

ccttggagat tggcctgg

18

<210> 40

<211> 412

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(396)

<400> 40

atg	agg	ctc	cct	gct	cag	ctc	ctg	ggg	ctg	cta	atg	ctc	tgg	gtc	cca	48
Met	Arg	Leu	Pro	Ala	Gln	Leu	Leu	Gly	Leu	Leu	Met	Leu	Trp	Val	Pro	
1				5				10						15		

ggc	tcc	agt	ggg	gat	gtt	gtg	atg	act	cag	tct	cca	ctc	tcc	ctg	ccc	96
Gly	Ser	Ser	Gly	Asp	Val	Val	Met	Thr	Gln	Ser	Pro	Leu	Ser	Leu	Pro	
			20					25					30			

gtc	acc	ctt	gga	cag	ccg	gcc	tcc	atc	tcc	tgc	aga	tca	agt	cag	agc	144
Val	Thr	Leu	Gly	Gln	Pro	Ala	Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	
		35				40					45					

ctt	gtg	cac	agt	aat	gga	aag	acc	tat	tta	cat	tgg	ttt	cag	cag	agg	192
Leu	Val	His	Ser	Asn	Gly	Lys	Thr	Tyr	Leu	His	Trp	Phe	Gln	Gln	Arg	
	50					55					60					

cca	ggc	caa	tct	cca	agg	ctc	cta	att	tat	aaa	ggt	tcc	aac	cga	ttt	240
Pro	Gly	Gln	Ser	Pro	Arg	Leu	Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	
65					70					75					80	

tct	ggt	gtc	cca	gac	aga	ttc	agc	ggc	agt	ggg	tca	ggc	act	gat	ttc	288
Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	
				85				90						95		

aca	ctg	aaa	atc	agc	agg	gtg	gag	gct	gag	gat	ggt	gga	ggt	tat	tac	336
Thr	Leu	Lys	Ile	Ser	Arg	Val	Glu	Ala	Glu	Asp	Val	Gly	Val	Tyr	Tyr	
		100					105						110			

tgc	tct	caa	agt	aca	cat	ggt	ccg	tac	acg	ttt	ggc	cag	ggg	acc	aag	384
Cys	Ser	Gln	Ser	Thr	His	Val	Pro	Tyr	Thr	Phe	Gly	Gln	Gly	Thr	Lys	
		115					120					125				

ctg	gag	atc	aaa	cgtgagtgga	tccgcg	412
Leu	Glu	Ile	Lys			
			130			

<210> 41
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 41
 gaggatgttg gagtttattt ctgctctcaa agtacacat 39

<210> 42
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 42
 ataaactcca acatcctc 18

<210> 43
 <211> 412
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(396)

<400> 43
 atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt cag cag agg 192
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg
 50 55 60

cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt	240
Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe	
65 70 75 80	
tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc	288
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe	
85 90 95	
aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat ttc	336
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Phe	
100 105 110	
tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag	384
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys	
115 120 125	
ctg gag atc aaa cgtgagtgga tccgcg	412
Leu Glu Ile Lys	
130	

<210> 44

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 44

aagacctatt tacattggta ccagcagagg ccaggccaa

39

<210> 45

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 45

ccaatgtaaa taggtctttc

20

<210> 46

<211> 412

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(396)

<400> 46

atg	agg	ctc	cct	gct	cag	ctc	ctg	ggg	ctg	cta	atg	ctc	tgg	gtc	cca	48
Met	Arg	Leu	Pro	Ala	Gln	Leu	Leu	Gly	Leu	Leu	Met	Leu	Trp	Val	Pro	
1				5				10					15			

ggc	tcc	agt	ggg	gat	gtt	gtg	atg	act	cag	tct	cca	ctc	tcc	ctg	ccc	96
Gly	Ser	Ser	Gly	Asp	Val	Val	Met	Thr	Gln	Ser	Pro	Leu	Ser	Leu	Pro	
			20					25					30			

gtc	acc	ctt	gga	cag	ccg	gcc	tcc	atc	tcc	tgc	aga	tca	agt	cag	agc	144
Val	Thr	Leu	Gly	Gln	Pro	Ala	Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	
		35				40					45					

ctt	gtg	cac	agt	aat	gga	aag	acc	tat	tta	cat	tgg	tac	cag	cag	agg	192
Leu	Val	His	Ser	Asn	Gly	Lys	Thr	Tyr	Leu	His	Trp	Tyr	Gln	Gln	Arg	
	50					55					60					

cca	ggc	caa	tct	cca	agg	cgc	cta	att	tat	aaa	gtt	tcc	aac	cga	ttt	240
Pro	Gly	Gln	Ser	Pro	Arg	Arg	Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	
65					70					75					80	

tct	ggc	gtc	cca	gac	aga	ttc	agc	ggc	agt	ggg	tca	ggc	act	gat	ttc	288
Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	
				85				90						95		

aca	ctg	aaa	atc	agc	agg	gtg	gag	gct	gag	gat	gtt	gga	gtt	tat	tac	336
Thr	Leu	Lys	Ile	Ser	Arg	Val	Glu	Ala	Glu	Asp	Val	Gly	Val	Tyr	Tyr	
		100					105					110				

tgc	tct	caa	agt	aca	cat	gtt	ccg	tac	acg	ttt	ggc	cag	ggg	acc	aag	384
Cys	Ser	Gln	Ser	Thr	His	Val	Pro	Tyr	Thr	Phe	Gly	Gln	Gly	Thr	Lys	
		115				120					125					

ctg	gag	atc	aaa	cgtgagtgga	tccgcg	412
Leu	Glu	Ile	Lys			
	130					

<210> 47

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 47

cctatttaca	ttggtttctg	cagaggccag	gccaatctc	39
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<210> 48
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 48
 gaaaccaatg taaataggtc

20

<210> 49
 <211> 412
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(396)

<400> 49
 atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15
 ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30
 gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45
 ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt ctg cag agg 192
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Leu Gln Arg
 50 55 60
 cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240
 Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
 65 70 75 80
 tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95
 aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384
 Cys Ser Phe Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

ctg gag atc aaa cgtgagtgga tccgcg 412
 Leu Glu Ile Lys
 130

<210> 50
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 50
 cagaagccag gccagtctcc aagactcctg atctacaaag 40

<210> 51
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 51
 ggagactggc ctggcttctg cagataccaa tgtaaataagg 40

<210> 52
 <211> 412
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(396)

<400> 52
 atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

ctt gtg cac agt aat gga aag acc tat tta cat tgg tat ctg cag aag	192
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu Gln Lys	
50 55 60	
cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac cga ttt	240
Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe	
65 70 75 80	
tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc	288
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe	
85 90 95	
aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac	336
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr	
100 105 110	
tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag	384
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys	
115 120 125	
ctg gag atc aaa cgtgagtgga tccgcg	412
Leu Glu Ile Lys	
130	

<210> 53

<211> 54

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 53

cagtctccac tctccctgcc cgtcaccct ggagagccgg cctccatctc ctgc

54

<210> 54

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 54

gggtggaggc tgatgatgtt ggaatttatt actgctctc

39

<210> 55

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 55

cagggagagt ggagactgag tcatacacaat atccccactg gagcctgg

48

<210> 56

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 56

ccaacatcat cagcctccac cc

22

<210> 57

<211> 412

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(396)

<400> 57

atg	agg	ctc	cct	gct	cag	ctc	ctg	ggg	ctg	cta	atg	ctc	tgg	gtc	cca	48
Met	Arg	Leu	Pro	Ala	Gln	Leu	Leu	Gly	Leu	Leu	Met	Leu	Trp	Val	Pro	
1				5				10					15			

ggc	tcc	agt	ggg	gat	att	gtg	atg	act	cag	tct	cca	ctc	tcc	ctg	ccc	96
Gly	Ser	Ser	Gly	Asp	Ile	Val	Met	Thr	Gln	Ser	Pro	Leu	Ser	Leu	Pro	
			20					25					30			

gtc	acc	cct	gga	gag	ccg	gcc	tcc	atc	tcc	tgc	aga	tca	agt	cag	agc	144
Val	Thr	Pro	Gly	Glu	Pro	Ala	Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	
		35				40					45					

ctt	gtg	cac	agt	aat	gga	aag	acc	tat	tta	cat	tgg	tat	ctg	cag	aag	192
Leu	Val	His	Ser	Asn	Gly	Lys	Thr	Tyr	Leu	His	Trp	Tyr	Leu	Gln	Lys	
	50					55					60					

cca	ggc	cag	tct	cca	aga	ctc	ctg	atc	tac	aaa	ggt	tcc	aac	cga	ttt	240
Pro	Gly	Gln	Ser	Pro	Arg	Leu	Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	
65					70				75						80	

tct	ggt	gtc	cca	gac	aga	ttc	agc	ggc	agt	ggg	tca	ggc	act	gat	ttc	288
Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	
				85				90						95		

aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att tat tac 336
 Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile Tyr Tyr
 100 105 110

tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

ctg gag atc aaa cgtgagtgga tccgcg 412
 Leu Glu Ile Lys
 130

<210> 58

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 58

ccttcaccaa ccatgttatg cactggctgc gacaggcc

38

<210> 59

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 59

ataatgagaa gttcaagggc agagtcacga tgacctca

38

<210> 60

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 60

tgctagaggg gggtactatt cttacgacga ctggggcc

38

<210> 61

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 61

ataacatggt tggagaaggt

20

<210> 62

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 62

ccttgaactt ctcattatac

20

<210> 63

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 63

atagtaaccc cctctagca

19

<210> 64

<211> 424

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(408)

<400> 64

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48

Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

1

5

10

15

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

20

25

30

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cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
      35              40              45

acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt 192
Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu
      50              55              60

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
      65              70              75              80

gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc 288
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser
      85              90              95

aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val
      100              105              110

tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa 384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln
      115              120              125

gca acc ctg gtc acc gtc tcc tca ggtgagtgga tccgcg 424
Ala Thr Leu Val Thr Val Ser Ser
      130              135

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<210> 65

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 65

acagtaaggg aaacacctat ttacagtggg atctgcaga

39

<210> 66

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 66

ataggtgttt cccttactgt gcagaaggct ctgacttga

39

<210> 67
 <211> 412
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(396)

<400> 67
 atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15
 ggc tcc agt ggg gat att gtg atg act cag tct cca ctc tcc ctg ccc 96
 Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30
 gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144
 Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45
 ctt ctg cac agt aag gga aac acc tat tta cag tgg tat ctg cag aag 192
 Leu Leu His Ser Lys Gly Asn Thr Tyr Leu Gln Trp Tyr Leu Gln Lys
 50 55 60
 cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac cga ttt 240
 Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe
 65 70 75 80
 tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95
 aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att tat tac 336
 Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile Tyr Tyr
 100 105 110
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125
 ctg gag atc aaa cgtgagtgga tccgcg 412
 Leu Glu Ile Lys
 130

<210> 68
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

 <400> 68
 aggtgtcgac tcccaggtgc agctg 25

 <210> 69
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

 <400> 69
 ccaccactcg agactgtgac cagggttgct tggcc 35

 <210> 70
 <211> 44
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

 <400> 70
 cagtctcgag tggtagcgga gggtccgata ttgtgatgac tcag 44

 <210> 71
 <211> 46
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

 <400> 71
 aaaaggaaaa gcggccgctc attatttgat ctccagcttg gtcccc 46

 <210> 72
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>

<221> CDS

<222> (1)..(15)

<400> 72

ggt ggc gga ggt tcc

15

Gly Gly Gly Gly Ser

1

5

<210> 73

<211> 768

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(759)

<400> 73

atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt 48

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly

1

5

10

15

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96

Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

20

25

30

cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144

Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

35

40

45

acc aac cat gtt att cac tgg ctg cga cag gcc cct gga caa ggg ctt 192

Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

50

55

60

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

65

70

75

80

gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc atc agc 288

Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser

85

90

95

aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val

100

105

110

tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384

Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

115

120

125

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gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg 432
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Ser Asp Ile Val
    130                135                140

atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc 480
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala
    145                150                155                160

tcc atc tcc tgc aga tca agt cag agc ctt gtg cac agt aat gga aag 528
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys
    165                170                175

acc tat tta cat tgg tat ctg cag aag cca ggc cag tct cca aga ctc 576
Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu
    180                185                190

ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc 624
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe
    195                200                205

agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg 672
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val
    210                215                220

gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt 720
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val
    225                230                235                240

ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa taatgagcg 768
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys
    245                250

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<210> 74

<211> 768

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<220>

<221> CDS

<222> (1)..(759)

<400> 74

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Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
    1                5                10                15

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96
Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
    20                25                30

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cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc	144
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe	
35 40 45	
acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt	192
Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu	
50 55 60	
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat	240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn	
65 70 75 80	
gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc	288
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser	
85 90 95	
aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc	336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val	
100 105 110	
tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa	384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln	
115 120 125	
gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg	432
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val	
130 135 140	
atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc	480
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala	
145 150 155 160	
tcc atc tcc tgc aga tca agt cag agc ctt ctg cac agt aag gga aac	528
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser Lys Gly Asn	
165 170 175	
acc tat tta cag tgg tat ctg cag aag cca ggc cag tct cca aga ctc	576
Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu	
180 185 190	
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc	624
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe	
195 200 205	
agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg	672
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val	
210 215 220	
gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt	720
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val	
225 230 235 240	
ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa taatgagcg	768
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys	
245 250	

<210> 75
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 75
 cgcggtatccg gtggtggcgg atcgacaggtg cagctgggtgc agtc 44

<210> 76
 <211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 76
 cgcggtatcca ccaccacccg aaccaccacc acctttgatc tccagcttgg tccc 54

<210> 77
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>
 <221> CDS
 <222> (1)..(45)

<400> 77
 ggt ggt ggt ggt tcg ggt ggt ggt gga tcc ggt ggt ggc gga tcg 45
 Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 1 5 10 15

<210> 78
 <211> 1515
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<220>
 <221> CDS
 <222> (1)..(1506)

<400> 78

atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt	48
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly	
1 5 10 15	
gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag	96
Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys	
20 25 30	
cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc	144
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe	
35 40 45	
acc aac cat gtt att cac tgg ctg cga cag gcc cct gga caa ggg ctt	192
Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu	
50 55 60	
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat	240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn	
65 70 75 80	
gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc atc agc	288
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser	
85 90 95	
aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc	336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val	
100 105 110	
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa	384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln	
115 120 125	
gca acc ctg gtc aca gtc tgc agt ggt ggc gga ggt tcc gat att gtg	432
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Ser Asp Ile Val	
130 135 140	
atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc	480
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala	
145 150 155 160	
tcc atc tcc tgc aga tca agt cag agc ctt gtg cac agt aat gga aag	528
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys	
165 170 175	
acc tat tta cat tgg tat ctg cag aag cca ggc cag tct cca aga ctc	576
Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu	
180 185 190	
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc	624
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe	
195 200 205	
agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg	672
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val	
210 215 220	

gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt	720
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val	
225 230 235 240	
ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa ggt ggt ggt	768
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly	
245 250 255	
ggg tgc ggt ggt ggt gga tcc ggt ggt ggc gga tgc cag gtg cag ctg	816
Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser Gln Val Gln Leu	
260 265 270	
gtg cag tct ggg gct gag gtg aag aag cct ggg gcc tca gtg cag gtt	864
Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Gln Val	
275 280 285	
tcc tgt aag gca tct gga tac acc ttc acc aac cat gtt att cac tgg	912
Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His Val Ile His Trp	
290 295 300	
ctg cga cag gcc cct gga caa ggg ctt gag tgg atg gga tat att tat	960
Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr	
305 310 315 320	
cct tac aat gat ggt act aag tat aat gag aag ttc aag gac aga gtc	1008
Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Asp Arg Val	
325 330 335	
acg atg acc tca gac acg tcc atc agc aca gcc tac atg gag ttg agc	1056
Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser	
340 345 350	
agt ctc aga tct gac gac acg gcc gtc tat tat tgt gct aga ggg ggt	1104
Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly	
355 360 365	
tac tat act tac gac gac tgg ggc caa gca acc ctg gtc aca gtc tgc	1152
Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser	
370 375 380	
agt ggt ggc gga ggt tcc gat att gtg atg act cag tct cca ctc tcc	1200
Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser	
385 390 395 400	
ctg ccc gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt	1248
Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser	
405 410 415	
cag agc ctt gtg cac agt aat gga aag acc tat tta cat tgg tat ctg	1296
Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu	
420 425 430	
cag aag cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac	1344
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435 440 445	

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<210> 79
<211> 1515
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      plasmid

<220>
<221> CDS
<222> (1)..(1506)


<400> 79
atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt      48
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
   1              5                10                  15

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag      96
Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
           20              25               30

cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc     144
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        35              40             45

acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt     192
Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu
       50            55              60

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat     240
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
    65            70            75          80

gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc     288
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser
         85              90              95
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gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc 288
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser
85 90 95

aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc	336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val	
100 105 110	
tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa	384
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln	
115 120 125	
gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg	432
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Ser Asp Ile Val	
130 135 140	
atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc	480
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala	
145 150 155 160	
tcc atc tcc tgc aga tca agt cag agc ctt ctg cac agt aag gga aac	528
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser Lys Gly Asn	
165 170 175	
acc tat tta cag tgg tat ctg cag aag cca ggc cag tct cca aga ctc	576
Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu	
180 185 190	
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc	624
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe	
195 200 205	
agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg	672
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val	
210 215 220	
gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt	720
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val	
225 230 235 240	
ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa ggt ggt ggt	768
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly	
245 250 255	
ggt tcg ggt ggt ggt gga tcc ggt ggt ggc gga tcg cag gtg cag ctg	816
Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Gln Leu	
260 265 270	
gtg cag tct ggg gct gag gtg aag aag cct ggg gcc tca gtg cag gtt	864
Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Gln Val	
275 280 285	
tcc tgt aag gca tct gga tac acc ttc acc aac cat gtt atg cac tgg	912
Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His Val Met His Trp	
290 295 300	
ctg cga cag gcc cct gga caa ggg ctt gag tgg atg gga tat att tat	960
Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr	
305 310 315 320	

cct tac aat gat ggt act aag tat aat gag aag ttc aag ggc aga gtc	1008
Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Gly Arg Val	
325 330 335	
acg atg acc tca gac acg tcc atc agc aca gcc tac atg gag ttg agc	1056
Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser	
340 345 350	
agt ctc aga tct gac gac acg gcc gtc tat tat tgt gct aga ggg ggt	1104
Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly	
355 360 365	
tac tat tct tac gac gac tgg ggc caa gca acc ctg gtc aca gtc tcg	1152
Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser	
370 375 380	
agt ggt ggc gga ggt tcc gat att gtg atg act cag tct cca ctc tcc	1200
Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser	
385 390 395 400	
ctg ccc gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt	1248
Leu Pro Val Thr Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser	
405 410 415	
cag agc ctt ctg cac agt aag gga aac acc tat tta cag tgg tat ctg	1296
Gln Ser Leu Leu His Ser Lys Gly Asn Thr Tyr Leu Gln Trp Tyr Leu	
420 425 430	
cag aag cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac	1344
Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn	
435 440 445	
cga ttt tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act	1392
Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Thr	
450 455 460	
gat ttc aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att	1440
Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile	
465 470 475 480	
tat tac tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg	1488
Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly	
485 490 495	
acc aag ctg gag atc aaa taatgagcg	1515
Thr Lys Leu Glu Ile Lys	
500	

<210> 80

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 80
 ctcgaggaat tcccaccatg ggatggagct gtatcatcc 39

<210> 81
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 81
 gggggcctgt cgcagccagt gaataac 27

<210> 82
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 82
 gggcagtcag tgtatacggc cgtgtcgtca gatctgagac tgctc 45

<210> 83
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 83
 gggcaatgcc ttgagtggat gggatatatt tatcc 35

<210> 84
 <211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 84
 tcattatttg atctcaagct tgggtcccgca gccaaacgtg tacggaacat gtgt 54

<210> 85
 <211> 68
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 85
 tactattgtg ctagaggggg ttactatact tacgacgact ggggctgcgc aaccctgggc 60
 acagtctc 68

<210> 86
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 86
 gggcttctgc agataccaat gtaaataaggc ctttc 35

<210> 87
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 87
 gggcagtgcc caagactcct gatctacaaa gtttcc 36

<210> 88
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 88
 tcattatttg atctcaagct tggccccctg gccaaac 37

<210> 89
 <211> 708
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide sequence

<400> 89

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caggtgcagc tgggtgcagtc tggggctgag gtgaagaagc ctggggcctc agtgcagggt 60
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cccgggcaat gccttgagtg gatgggatat atttatcctt acaatgatgg tactaagtat 180
aatgagaagt tcaaggacag agtcacgatg acctcagaca cgtccatcag cacagcctac 240
atggagttga gcagtctcag atctgacgac acggccgtct attattgtgc tagaggggggt 300
tactatactt acgacgactg gggccaagca accctgggtc cagtctcgag tggtagcgga 360
ggttccgata ttgtgatgac tcagtctcca ctctccctgc ccgtcacccc tggagagccg 420
gcctccatct cctgcagatc aagtcagagc cttgtgcaca gtaatggaaa gacctattta 480
cattgggtatc tgcagaagcc aggccagtct ccaagactcc tgatctacaa agtttccaac 540
cgattttctg gtgtcccaga cagattcagc ggcagtgggt caggcactga tttcacactg 600
aaaatcagca gggtaggaggc tgatgatgtt ggaatttatt actgctctca aagtacacat 660
gttccgtaca cgtttggtg cgggaccaag cttgagatca aataatga 708

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<210> 90

<211> 234

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic protein

<400> 90

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 1             5             10             15
Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His
          20             25             30
Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Cys Leu Glu Trp Met
          35             40             45
Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe
          50             55             60
Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr
          65             70             75             80
Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
          85             90             95
Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln Ala Thr Leu
          100            105            110
Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln
          115            120            125
Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser
          130            135            140
Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu
          145            150            155            160

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His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr
 165 170 175

Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser
 180 185 190

Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp
 195 200 205

Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr
 210 215 220

Phe Gly Cys Gly Thr Lys Leu Glu Ile Lys
 225 230

<210> 91
 <211> 708
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 polynucleotide sequence

<400> 91
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 cctgggcaag ggcttgagt gatgggat atttatcctt acaatgatgg tactaagtat 180
 aatgagaagt tcaaggacag agtcacgatg acctcagaca cgtccatcag cacagcctac 240
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 tactatactt acgacgactg gggctgcgca accctgggtca cagtctcgag tgggtggcgga 360
 ggttccgata ttgtgatgac tcagtctcca ctctccctgc ccgtcaccctc tggagagccg 420
 gcctccatct cctgcagatc aagtcagagc cttgtgcaca gtaatggaaa gacctattta 480
 cattggtatc tgcagaagcc cgggcagtgc ccaagactcc tgatctacaa agtttccaac 540
 cgattttctg gtgtcccaga cagattcagc ggcagtgggt caggcactga tttcacactg 600
 aaaatcagca ggggtggaggc tgatgatgtt ggaatttatt actgctctca aagtacacat 660
 gttccgtaca cgtttggcca ggggaccaag cttgagatca aataatga 708

<210> 92
 <211> 234
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 protein

<400> 92
 Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
 1 5 10 15

Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His
 20 25 30

Val	Ile	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	Glu	Trp	Met	
35						40						45				
Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn	Glu	Lys	Phe	
50						55						60				
Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Ile	Ser	Thr	Ala	Tyr	
65						70						75			80	
Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
			85						90						95	
Ala	Arg	Gly	Gly	Tyr	Tyr	Thr	Tyr	Asp	Asp	Trp	Gly	Cys	Ala	Thr	Leu	
			100						105						110	
Val	Thr	Val	Ser	Ser	Gly	Gly	Gly	Gly	Ser	Asp	Ile	Val	Met	Thr	Gln	
			115						120						125	
Ser	Pro	Leu	Ser	Leu	Pro	Val	Thr	Pro	Gly	Glu	Pro	Ala	Ser	Ile	Ser	
130						135						140				
Cys	Arg	Ser	Ser	Gln	Ser	Leu	Val	His	Ser	Asn	Gly	Lys	Thr	Tyr	Leu	
145						150						155			160	
His	Trp	Tyr	Leu	Gln	Lys	Pro	Gly	Gln	Cys	Pro	Arg	Leu	Leu	Ile	Tyr	
			165						170						175	
Lys	Val	Ser	Asn	Arg	Phe	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	
			180						185						190	
Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile	Ser	Arg	Val	Glu	Ala	Asp	
195						200						205				
Asp	Val	Gly	Ile	Tyr	Tyr	Cys	Ser	Gln	Ser	Thr	His	Val	Pro	Tyr	Thr	
210						215						220				
Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys							
225			230													

<210> 93

<211> 136

<212> PRT

<213> Artificial Sequence

$\langle 220 \rangle$

<223> Description of Artificial Sequence: Synthetic plasmid

<400> 93

Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80

Glu Lys Phe Lys Asp Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser
 85 90 95

Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125

Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 94

<211> 136

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 94

Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80

Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser
 85 90 95

Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125

Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 95
 <211> 136
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 95
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45
 Thr Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser
 85 90 95
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125
 Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 96
 <211> 136
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 96
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80

Glu Lys Phe Lys Asp Lys Val Thr Met Thr Ser Asp Thr Ser Thr Ser
 85 90 95

Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125

Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 97

<211> 136

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 97

Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80

Glu Lys Phe Lys Asp Arg Val Thr Leu Thr Ser Asp Thr Ser Thr Ser
 85 90 95

Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125

Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 98
 <211> 136
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 98
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45
 Thr Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser
 85 90 95
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125
 Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 99
 <211> 136
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 99
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30

Pro	Gly	Ala	Ser	Val	Gln	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe
35						40						45			
Thr	Asn	His	Val	Ile	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu
50						55						60			
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn
65						70						75			
Glu	Lys	Phe	Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Ile	Ser
			85						90						
Thr	Ala	Tyr	Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val
			100						105						
Tyr	Tyr	Cys	Ala	Arg	Gly	Gly	Tyr	Tyr	Thr	Tyr	Asp	Asp	Trp	Gly	Gln
			115						120						
Ala	Thr	Leu	Val	Thr	Val	Ser	Ser								
130						135									

$\langle 210 \rangle$ 100

<211> 132

<212> PRT

<213> Artificial Sequence

$\langle 220 \rangle$

<223> Description of Artificial Sequence: Synthetic
plasmid

$\langle 400 \rangle$ 100

Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15

Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30

Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
35 40 45

Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg
50 55 60

Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
65 70 75 80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
85 90 95

Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
100 105 110

Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125

Leu Glu Ile Lys
130

<210> 101
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 101
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30
Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
35 40 45
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg
50 55 60
Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe
65 70 75 80
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
85 90 95
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
100 105 110
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125
Leu Glu Ile Lys
130

<210> 102
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 102
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30

Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg
 50 55 60

Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
 65 70 75 80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95

Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Phe
 100 105 110

Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

Leu Glu Ile Lys
 130

<210> 103

<211> 132

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 103

Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
 1 5 10 15

Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
 20 25 30

Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
 35 40 45

Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Gln Gln Arg
 50 55 60

Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
 65 70 75 80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
 85 90 95

Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110

Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

Leu Glu Ile Lys
130

<210> 104
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 104
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30
Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
35 40 45
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Leu Gln Arg
50 55 60
Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe
65 70 75 80
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
85 90 95
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
100 105 110
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125
Leu Glu Ile Lys
130

<210> 105
<211> 132
<212> PRT
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 105
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30

[illegible]

```
<210> 106
<211> 132
<212> PRT
<213> Artificial Sequence
```

```
<220>
<223> Description of Artificial Sequence: Synthetic
      plasmid
```

```
<400> 106
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
   1                               5                      10          15

Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro
      20                25              30

Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
     35                40              45

Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu Gln Lys
    50                  55              60

Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe
   65                70              75              80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
      85                90              95

Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile Tyr Tyr
     100               105             110

Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
    115               120             125
```

Leu Glu Ile Lys
130

<210> 107
<211> 136
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 107
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45
Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
65 70 75 80
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser
85 90 95
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val
100 105 110
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln
115 120 125
Ala Thr Leu Val Thr Val Ser Ser
130 135

<210> 108
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 108
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro
1 5 10 15
Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro
20 25 30

Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser
35 40 45

Leu Leu His Ser Lys Gly Asn Thr Tyr Leu Gln Trp Tyr Leu Gln Lys
50 55 60

Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe
65 70 75 80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
85 90 95

Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile Tyr Tyr
100 105 110

Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125

Leu Glu Ile Lys
130

<210> 109

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 109

Gly Gly Gly Gly Ser
1 5

 $\langle 210 \rangle$ 110

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 110

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu
 50 55 60
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn
 65 70 75 80
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser
 85 90 95
 Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val
 100 105 110
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln
 115 120 125
 Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val
 130 135 140
 Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala
 145 150 155 160
 Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys
 165 170 175
 Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu
 180 185 190
 Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe
 195 200 205
 Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val
 210 215 220
 Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val
 225 230 235 240
 Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys
 245 250

<210> 111

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 111

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
 1 5 10 15
 Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
 20 25 30
 Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

55

Thr	Asn	His	Val	Met	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu
50						55					60				
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn
65					70					75					80
Glu	Lys	Phe	Lys	Gly	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Ile	Ser
				85					90					95	
Thr	Ala	Tyr	Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val
			100					105					110		
Tyr	Tyr	Cys	Ala	Arg	Gly	Gly	Tyr	Tyr	Ser	Tyr	Asp	Asp	Trp	Gly	Gln
		115					120					125			
Ala	Thr	Leu	Val	Thr	Val	Ser	Ser	Gly	Gly	Gly	Gly	Ser	Asp	Ile	Val
	130						135					140			
Met	Thr	Gln	Ser	Pro	Leu	Ser	Leu	Pro	Val	Thr	Pro	Gly	Glu	Pro	Ala
145					150					155					160
Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	Leu	Leu	His	Ser	Lys	Gly	Asn
				165					170					175	
Thr	Tyr	Leu	Gln	Trp	Tyr	Leu	Gln	Lys	Pro	Gly	Gln	Ser	Pro	Arg	Leu
			180					185					190		
Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	Ser	Gly	Val	Pro	Asp	Arg	Phe
		195					200						205		
Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile	Ser	Arg	Val
	210					215					220				
Glu	Ala	Asp	Asp	Val	Gly	Ile	Tyr	Tyr	Cys	Ser	Gln	Ser	Thr	His	Val
225					230					235					240
Pro	Tyr	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys			
				245					250						

<210> 112

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 112

Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser
1				5					10					15

<210> 113
 <211> 502
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 plasmid

<400> 113

Met	Gly	Trp	Ser	Cys	Ile	Ile	Leu	Phe	Leu	Val	Ala	Thr	Ala	Thr	Gly	1	5	10	15
Val	Asp	Ser	Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	20	25	30	
Pro	Gly	Ala	Ser	Val	Gln	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	35	40	45	
Thr	Asn	His	Val	Ile	His	Trp	Leu	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	50	55	60	
Glu	Trp	Met	Gly	Tyr	Ile	Tyr	Pro	Tyr	Asn	Asp	Gly	Thr	Lys	Tyr	Asn	65	70	75	80
Glu	Lys	Phe	Lys	Asp	Arg	Val	Thr	Met	Thr	Ser	Asp	Thr	Ser	Ile	Ser	85	90	95	
Thr	Ala	Tyr	Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	100	105	110	
Tyr	Tyr	Cys	Ala	Arg	Gly	Gly	Tyr	Tyr	Thr	Tyr	Asp	Asp	Trp	Gly	Gln	115	120	125	
Ala	Thr	Leu	Val	Thr	Val	Ser	Ser	Gly	Gly	Gly	Gly	Ser	Asp	Ile	Val	130	135	140	
Met	Thr	Gln	Ser	Pro	Leu	Ser	Leu	Pro	Val	Thr	Pro	Gly	Glu	Pro	Ala	145	150	155	160
Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	Leu	Val	His	Ser	Asn	Gly	Lys	165	170	175	
Thr	Tyr	Leu	His	Trp	Tyr	Leu	Gln	Lys	Pro	Gly	Gln	Ser	Pro	Arg	Leu	180	185	190	
Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	Ser	Gly	Val	Pro	Asp	Arg	Phe	195	200	205	
Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile	Ser	Arg	Val	210	215	220	
Glu	Ala	Asp	Asp	Val	Gly	Ile	Tyr	Tyr	Cys	Ser	Gln	Ser	Thr	His	Val	225	230	235	240
Pro	Tyr	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys	Gly	Gly	Gly	245	250	255	

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Gln Leu
 260 265 270
 Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Gln Val
 275 280 285
 Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His Val Ile His Trp
 290 295 300
 Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr
 305 310 315 320
 Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Asp Arg Val
 325 330 335
 Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser
 340 345 350
 Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly
 355 360 365
 Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser
 370 375 380
 Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser
 385 390 395 400
 Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser
 405 410 415
 Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu
 420 425 430
 Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn
 435 440 445
 Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr
 450 455 460
 Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile
 465 470 475 480
 Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly
 485 490 495
 Thr Lys Leu Glu Ile Lys
 500

<210> 114

<211> 502

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
plasmid

<400> 114

Met 1	Gly	Trp	Ser	Cys 5	Ile	Ile	Leu	Phe	Leu	Val	Ala	Thr	Ala	Thr	Gly 15
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Pro	Gly	Ala 35	Ser	Val	Gln	Val	Ser 40	Cys	Lys	Ala	Ser	Gly 45	Tyr	Thr	Phe
Thr	Asn 50	His	Val	Met	His	Trp 55	Leu	Arg	Gln	Ala	Pro 60	Gly	Gln	Gly	Leu
Glu 65	Trp	Met	Gly	Tyr	Ile 70	Tyr	Pro	Tyr	Asn	Asp 75	Gly	Thr	Lys	Tyr	Asn 80
Glu	Lys	Phe	Lys	Gly 85	Arg	Val	Thr	Met	Thr 90	Ser	Asp	Thr	Ser	Ile 95	Ser
Thr	Ala	Tyr	Met 100	Glu	Leu	Ser	Ser	Leu 105	Arg	Ser	Asp	Asp	Thr	Ala	Val
Tyr	Tyr	Cys 115	Ala	Arg	Gly	Gly	Tyr 120	Tyr	Ser	Tyr	Asp	Asp 125	Trp	Gly	Gln
Ala	Thr 130	Leu	Val	Thr	Val	Ser 135	Ser	Gly	Gly	Gly	Gly 140	Ser	Asp	Ile	Val
Met 145	Thr	Gln	Ser	Pro	Leu 150	Ser	Leu	Pro	Val	Thr 155	Pro	Gly	Glu	Pro	Ala 160
Ser	Ile	Ser	Cys	Arg 165	Ser	Ser	Gln	Ser	Leu 170	Leu	His	Ser	Lys	Gly 175	Asn
Thr	Tyr	Leu	Gln 180	Trp	Tyr	Leu	Gln	Lys 185	Pro	Gly	Gln	Ser	Pro 190	Arg	Leu
Leu	Ile	Tyr 195	Lys	Val	Ser	Asn	Arg 200	Phe	Ser	Gly	Val	Pro 205	Asp	Arg	Phe
Ser	Gly 210	Ser	Gly	Ser	Gly	Thr 215	Asp	Phe	Thr	Leu	Lys 220	Ile	Ser	Arg	Val
Glu 225	Ala	Asp	Asp	Val	Gly 230	Ile	Tyr	Tyr	Cys 235	Ser	Gln	Ser	Thr	His	Val 240
Pro	Tyr	Thr	Phe 245	Gly	Gln	Gly	Thr	Lys	Leu 250	Glu	Ile	Lys	Gly	Gly 255	Gly
Gly	Ser	Gly	Gly 260	Gly	Gly	Ser	Gly	Gly 265	Gly	Gly	Ser	Gln	Val 270	Gln	Leu
Val	Gln	Ser 275	Gly	Ala	Glu	Val	Lys 280	Lys	Pro	Gly	Ala	Ser 285	Val	Gln	Val
Ser	Cys 290	Lys	Ala	Ser	Gly	Tyr 295	Thr	Phe	Thr	Asn	His 300	Val	Met	His	Trp

Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr
 305 310 315 320
 Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Gly Arg Val
 325 330 335
 Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser
 340 345 350
 Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly
 355 360 365
 Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser
 370 375 380
 Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser
 385 390 395 400
 Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser
 405 410 415
 Gln Ser Leu Leu His Ser Lys Gly Asn Thr Tyr Leu Gln Trp Tyr Leu
 420 425 430
 Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn
 435 440 445
 Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr
 450 455 460
 Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile
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peptide linker

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